



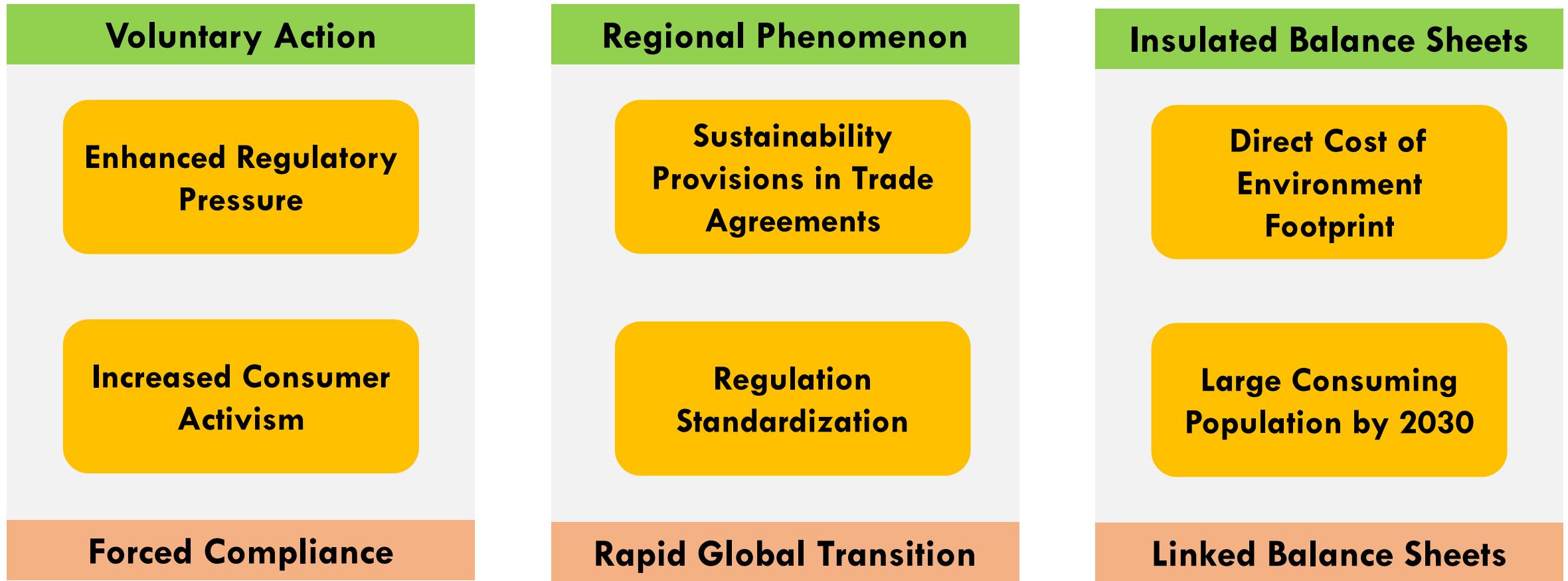
Sustainable Innovation - Versatile Solutions for Current Industry Challenges

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Succeeding with Sustainability



By 2030, demanding law and regulation will shrink the business operating space

Nonwoven Industry – Current Challenges

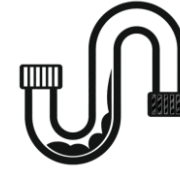
Challenges



Landfill Issue



Marine Pollution



Sewage Clogging



Chemical Heavy

Regulatory Pressure Building Upon



Disposable Hygiene



SINGLE USE

Single Use Plastic



Non Flushable Wipes



Preservative Infused



SUPD Regulations Worldwide



EU



India



California



South Australia

More Countries & States to follow...

Nonwoven industry immediately needs sustainable alternatives



Raw Material is the Key to Sustainability

Alternative Materials – Benefits & Challenges

Natural



Fully Biodegradable



Contamination
Possibility



Limited Engineering Possibilities
for Multiple Uses

Regenerated Cellulose



Fully Biodegradable



Contamination Free



Engineering Possibilities
for Multiple Uses

Plastic/ Synthetic



Non Biodegradable



Contamination Free



Engineering Possibilities
for Multiple Uses

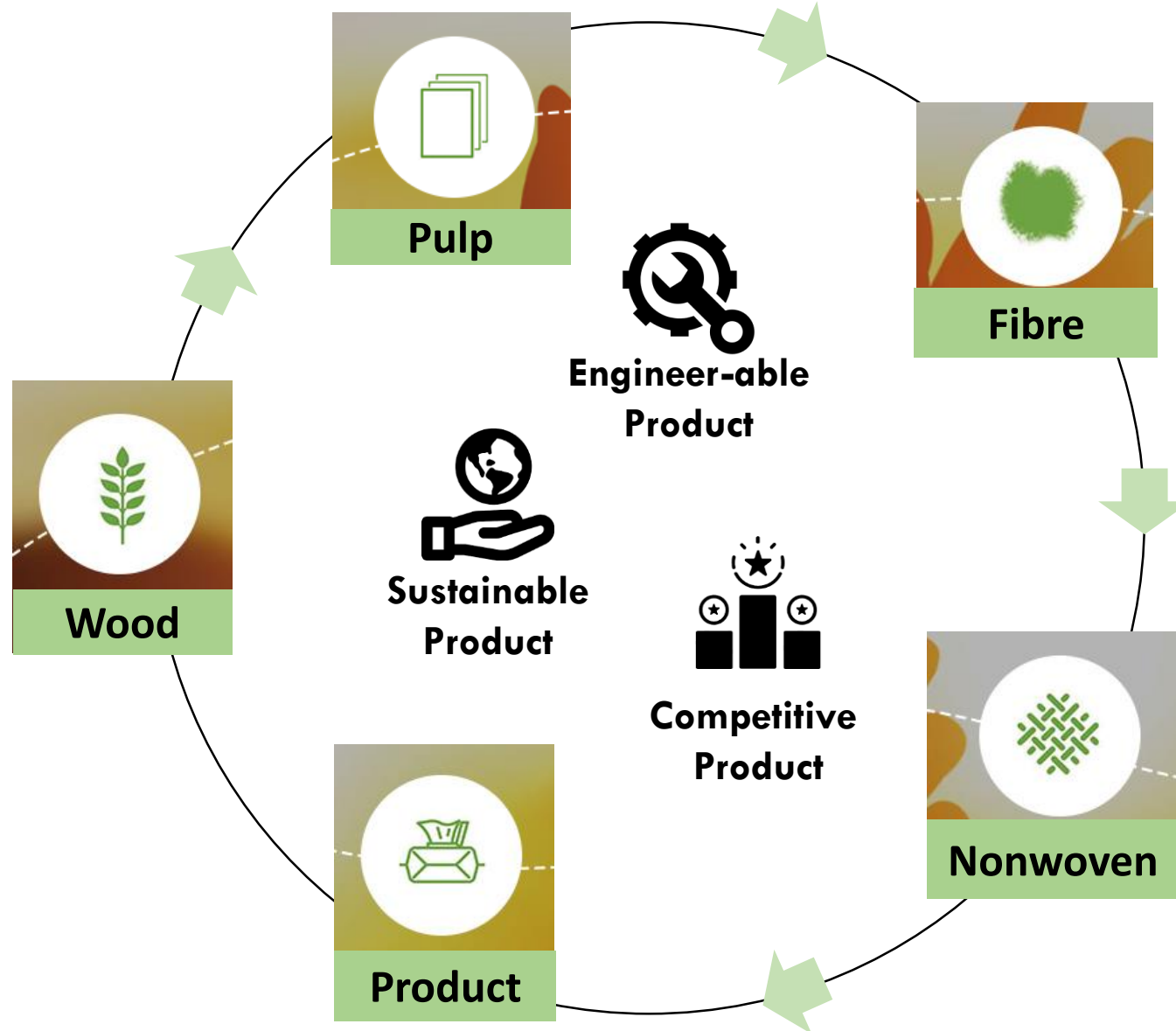
Regenerated Cellulose combines the advantages of Natural & Plastic/Synthetics



Exclusivity to Co-creation

Paradigm shift in Value Chain Partnerships

Value Chain Partnership



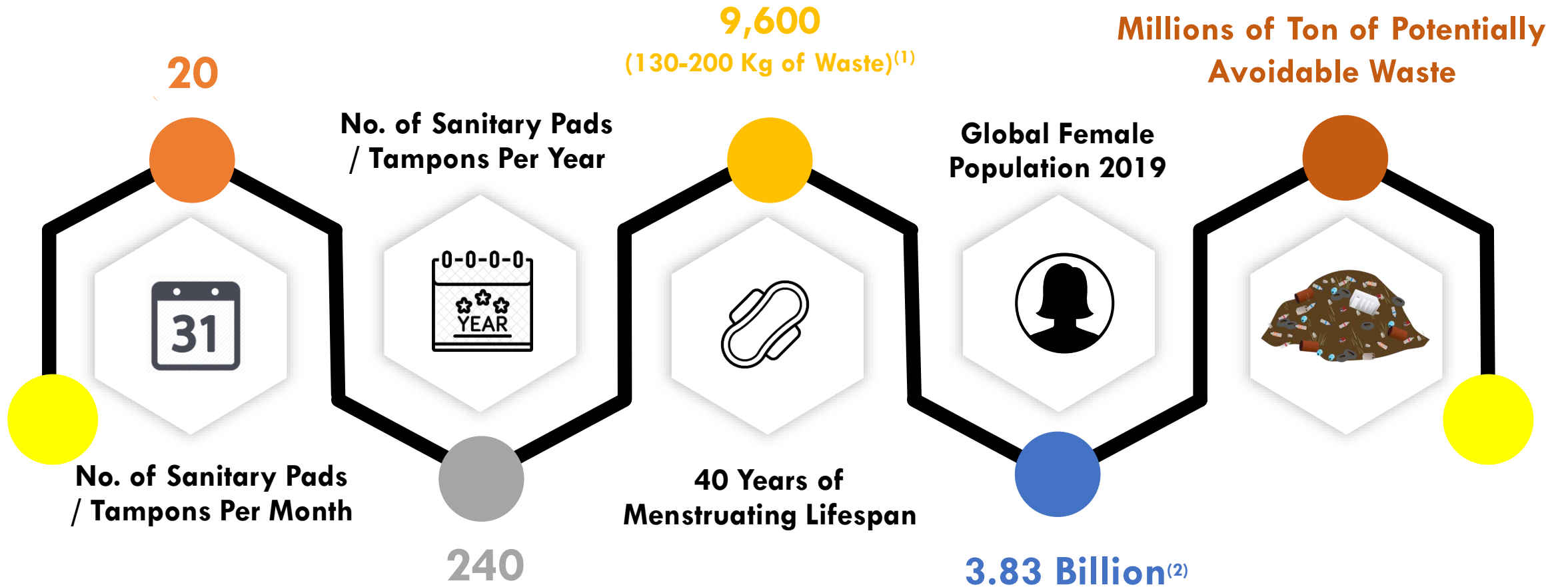
Collaboration is the fastest way to solve world problems



Sustainable Female Hygiene Products

Tackling Landfill Issue

Female Hygiene Products (FHP) – Current Challenges



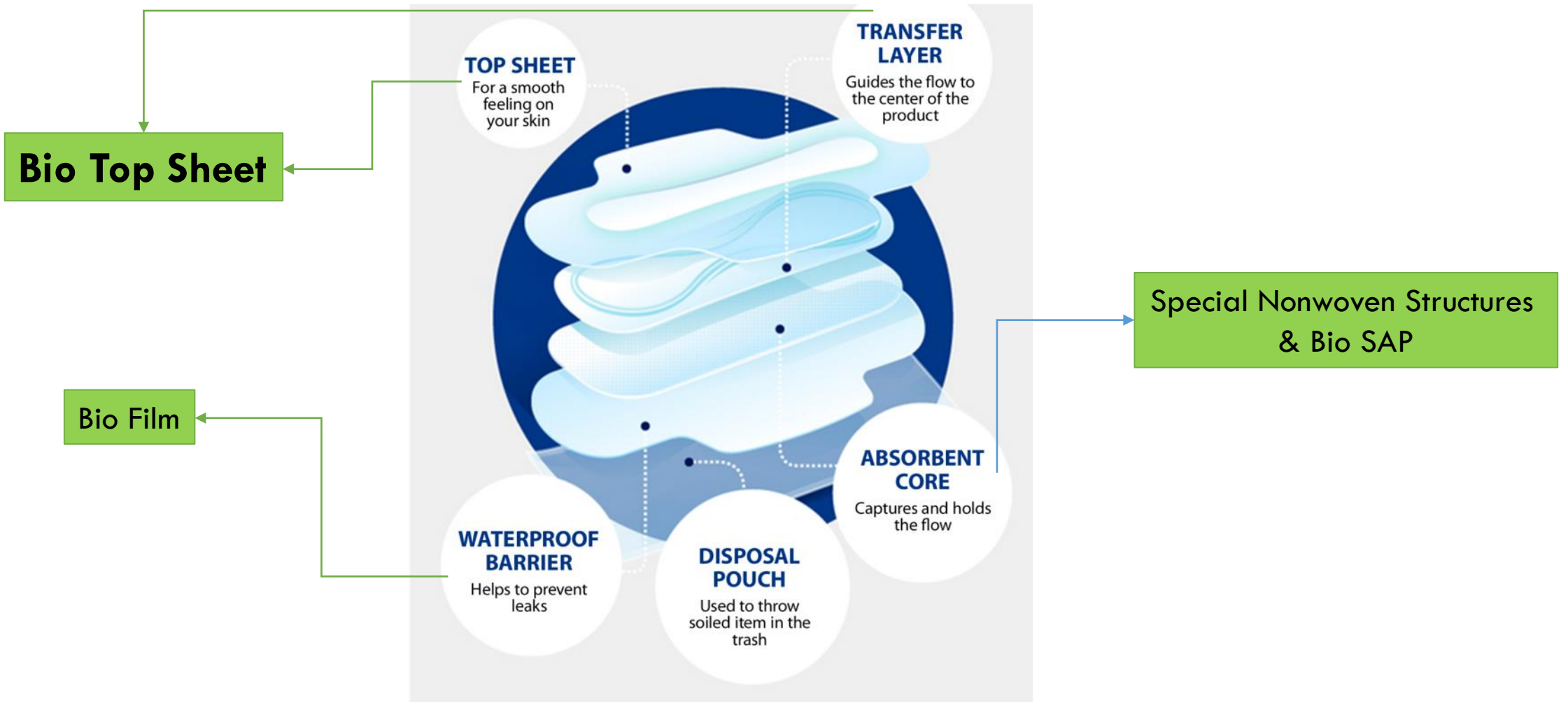
Source: [Sustainable Menstruation- The Impact of Menstrual Products on the Environment](#)

(1) [What is the environmental impact of menstrual products?](#)

(2) [World Population](#)

With increasing population & penetration of FHP – we've much bigger problem!

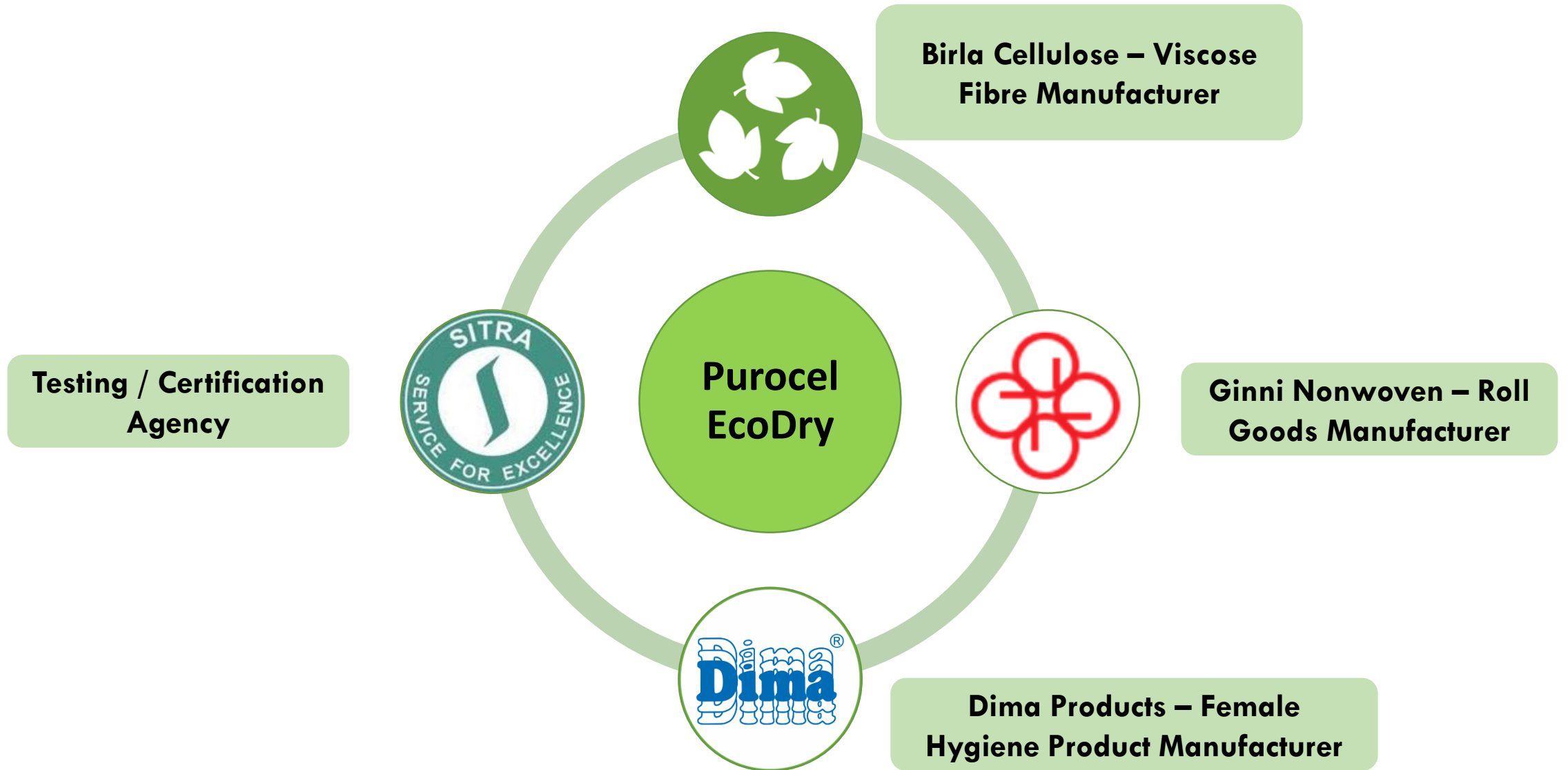
Sanitary Napkins – Layer wise Alternatives



Source: <https://eufactcheck.eu/factcheck/unchecked-conventional-menstrual-pads-are-made-up-of-90-plastic-materials/> & Credits: ©Vania

Layer by layer approach to make a fully biodegradable sanitary napkin

Our Co-creation Approach



Logo Credits: ©Ginni Filaments, ©Dima Products, ©The South India Textile Research Association (SITRA)

We were able to approach the FHP issue in fastest way only due to co-creation

Sanitary Napkin – Qualifying Criteria

Test



Absorption

Description

It should absorb 30 ml liquid flowed on to the center of sanitary napkin (at the rate of 15 ml per minute and it should not leak through back sheet of napkin.

Standards

WSP 070.3 & ISO 9073-8



Repeated Liquid Strike Through Test

It is defined as the time taken for a known volume of liquid to pass through the sanitary napkin till it's back sheet, the test is usually conducted for three consecutive times.

WSP 70.8 & ISO 9073-14



Wetback

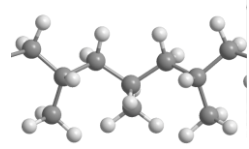
It examines the ability of sanitary napkin to resist the transport back onto the skin through the top layer after repeated liquid strike through test

WSP 70.8 & ISO 9073-14

A top sheet meeting above criteria can be used in a sanitary napkin

Sanitary Napkin – Top Sheet Overall Comparison

Criteria
(1-Lowest, 5-Highest)



Polypropylene



Purocel EcoDry (Viscose)



Cotton

Price

5

4

2

Biodegradability

1

5

5

Performance

5

5

3

Ease of Processing

5

5

3

Total Score

16

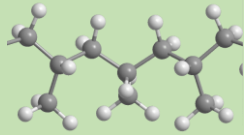
19

13

Purocel EcoDry combines the advantages of Cotton & Polypropylene

Sanitary Napkin – Product Comparison

(Absorbency Test – 30 ml in 2 Minutes)



Polypropylene



Purocel EcoDry (Viscose)



Cotton



Absorbency tests performed as per WSP 070.3 & ISO 9073-8 standards, this test is like a quality check for sanitary napkins

Purocel EcoDry top sheet based sanitary napkins passes the quality check

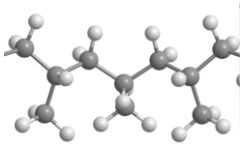
Sanitary Napkin – Product Comparison

(RLSTT & Wetback)

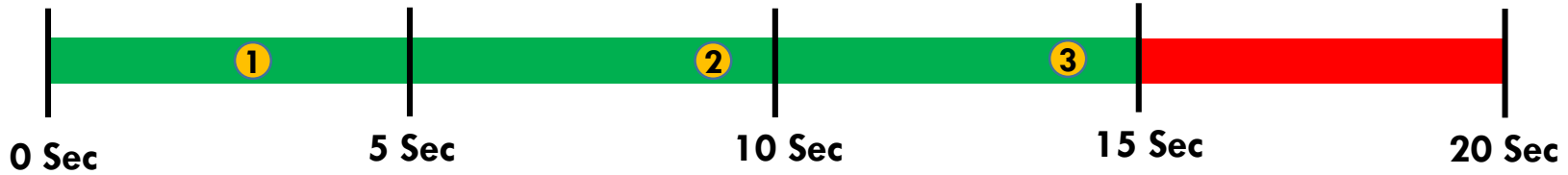
Top Sheet Type

Repeated Liquid Strike Through Test (Seconds/10 ml)

Wetback (%)



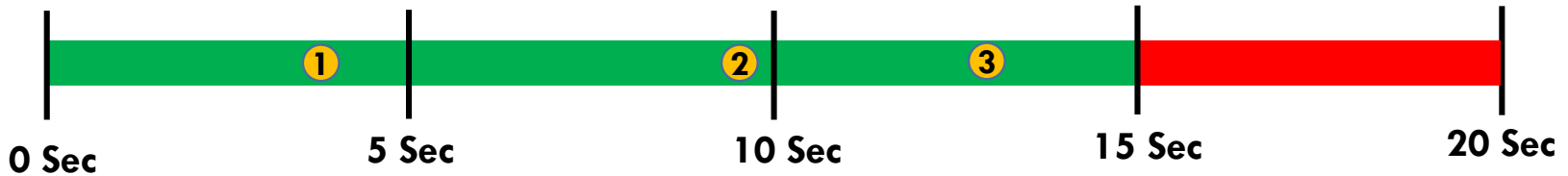
Polypropylene



100



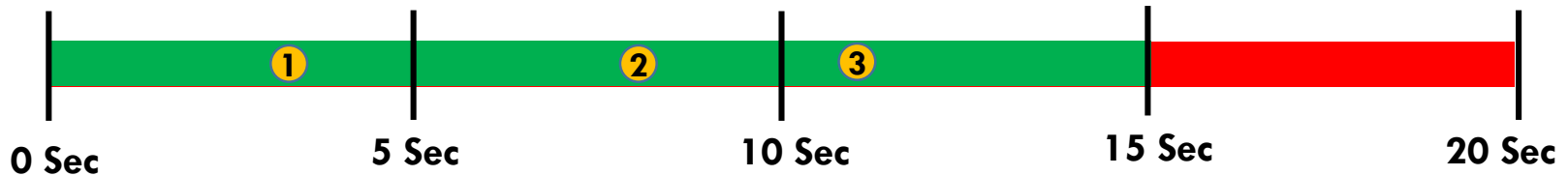
Purocel EcoDry
(Viscose)



~125



Cotton



~182

Repeated Liquid Strike Through Test & Wetback Test performed as per WSP 070.3 & ISO 9073-8 standards

Purocel EcoDry top sheet based sanitary napkin checks all the performance boxes!



Introducing Purocel EcoDry Top Sheet



Biodegradability



Soil



Water



Marine

Physical Performance



Fast Absorption



No Wetback / Dry



Sufficient Shear Strength

Comfort Performance



Soft to Skin



Breathable



Hypoallergenic

Purocel EcoDry Top Sheet for Hygiene Products



Exploring Sustainable Solutions to Nonwoven Industry Challenges

Tackling other Issues

Constantly Striving towards Sustainable Solutions

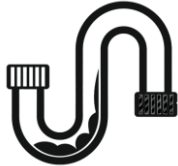
Challenges



Landfill Issue



Marine Pollution

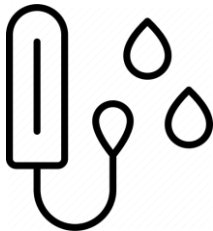


Sewage Clogging



Chemical Heavy

Sustainable Products



Purocel EcoDry



Biodegradable Single Use Products



Purocel EcoFlush



Purocel AntiBac

Our sustainability quest to solve world problems



Join Us in Solving World Problems



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Our quest to solve world problems continues with your support